DISPLAY SUPPORT

Technical Field and Background of the Invention

[0001] The invention relates to an apparatus for releasably and rigidly supporting a variety of substantially flat media displays in various environments, particularly on an automobile. The apparatus allows the user to frequently and easily change the display without any tools and provides firm support against movement caused by wind and other elements. The apparatus can be easily attached to automobiles, walls, ceilings, fences, poles or wires.

[0002] Related prior art inventions include signs that are permanently mounted to automobiles such as what is commonly seen on taxis and other commercial vehicles. These do not have the means to display merchandise, nor do they readily lend themselves to changing the sign or moving the sign from one vehicle to another without putting holes into the vehicle, thereby reducing its value.

[0003] Temporary mounted signs in their current state of the art can only be mounted in the same manner on all vehicles. While this may be acceptable for changeovers within similar vehicles owned by the same entity, it does not allow for the easy and low cost adaptation to sign changeover among disparate vehicles of various owners. In addition, there is no way to store various media within the sign to allow for a change of message without returning the old sign to a storage area.

[0004] Protective hitch cover message units have as their primary purpose the covering of the rear opening of hollow tube hitch assemblies. Current state of the art includes metal automotive manufacturer and dealer emblems, logos and the like. The size of these is

limited to the area immediately at the hitch tube.

[0005] Illuminated hitch tube covers, such as is disclosed by U.S. Patent No. 6,079136, are projected directly behind the hitch tube, have a transparent cover, and are limited in both size and position. In addition, they do not have the ability to display merchandise or be mounted on roofs, trunks, truck sides, or room surfaces such as walls, poles, or wires.

[0006] Roller mounted continuous loop signs are bulky, the sign copy is not easily changed, and the mechanism not adaptable to vehicles other than trucks. Nor are they useable for the display of merchandise.

[0007] Hinged covers for changeable sign panels must have some means of being kept open during any sign changing process. Condensation, grim, and spider webs can form on the interior surface thereby obscuring or damaging the sign panel behind it.

[0008] Sign frames mounted on building surfaces, such as walls, floors, and ceilings cannot be mounted to vehicles, nor does the existing state of the art allow for the use of a variety of media displays.

[0009] In an effort to overcome and eliminate the aforementioned problems, the present invention was conceived.

Summary of the Invention

[0010] Therefore it is an object of the present invention to provide an apparatus for supporting a variety of media displays, such as signs, posters, message systems, merchandise and game boards, in which the display can be easily changed by the user without any tools.

[0011] It is another object of the invention to provide a display support that is easily mountable on the roof, trunk, and sides of an automobile, or to the hollow tube towing hitch of an automobile, as well as building surfaces, poles, and wires.

[0012] It is yet another object of the invention to provide a display support that can be mounted and removed numerous times without material damage to the mounting surface or the display support.

[0013] These and other objectives of the present invention are achieved by providing a display support for releasably and rigidly holding a substantially flat display comprising a base frame member, first and second side frame members extending upwardly from opposing ends of the base frame member, the side frame members and base frame member each having a substantially "U" shaped channel formed therein, the channel in the first side frame member facing the channel in the second side frame member and the channel in the base frame member facing upwardly to form a continuous channel whereby the display slides into and is supported by the channel within the frame members, and support means for mounting the frame members on a supporting structure.

[0014] According to one preferred embodiment of the invention, the substantially flat display is a sign.

[0015] According to another preferred embodiment of the invention, the support means includes at least one horizontal bracket having opposing ends connected to the first and second side frame members above the base frame member for mounting the frame members to the supporting structure.

[0016] According to yet another preferred embodiment of the invention, the bracket

includes holes for mounting the frame members to a supporting structure.

[0017] According to yet another preferred embodiment of the invention, the display support includes at least one stabilizing member attached to the bracket for mounting the frame members to the supporting structure.

[0018] According to yet another preferred embodiment of the invention, the display support includes at least one horizontal bracket having opposing ends connected to the first and second side frame members above the base frame member and having holes therein for attaching accessories such as lights and license plates.

[0019] According to yet another preferred embodiment of the invention, the supporting structure is an automobile and the support means includes a horizontal support member having first and second ends, the first end having attachment means for releasable attachment to a towing hitch on an automobile, and a vertical support member connected to the second end of the horizontal support member and extending upwardly therefrom, the base frame member attached to the vertical support member whereby the display is positioned above the towing hitch.

[0020] According to yet another preferred embodiment of the invention, the display support includes at least one horizontal bracket having opposing ends connected to the first and second side frame members, the bracket attached to the vertical support member for stabilizing the frame members.

[0021] According to yet another preferred embodiment of the invention, the display support includes at least one stabilizing member extending from the bracket to the horizontal support member for stabilizing the frame members.

[0022] According to yet another preferred embodiment of the invention, the supporting structure is a trunk lid of an automobile and the supporting means includes a first support member for positioning on a substantially flat surface of an automobile, a second support member connected to the first support member and extending vertically therefrom, the base frame member attached to the second support member, a third support member connected to the first and second support members so as to form a triangle, and at least two straps connected to the mounting bracket, each of the straps having a hook for releasably attaching to the automobile.

[0023] According to yet another preferred embodiment of the invention, the supporting structure is a trunk lid of an automobile and the supporting means includes first and second horizontal brackets having opposing ends connected to the fist and second side frame members, first and second support members for positioning horizontally on the trunk lid of an automobile, third and fourth support members connected to the first and second support members, respectively, and extending vertically therefrom, the first horizontal bracket mounted on the first and second support members at opposing ends, and the second horizontal bracket mounted on the third and fourth support members at the opposing ends, and attachment means connected to the horizontal brackets for maintaining the display support on the trunk lid.

[0024] According to yet another preferred embodiment, the attachment means includes first and second straps attached to the first horizontal bracket at opposing ends, and third and fourth straps attached to the second horizontal bracket. The straps each have a hook for positioning under a trunk lid to maintain the display support on the trunk lid.

[0025] According to yet another preferred embodiment, the display support includes a third horizontal bracket having opposing ends connected to the first and second side frame members and a third pair of straps attached to the third horizontal bracket at opposing ends. The straps each have a hook for positioning under the trunk lid to maintain the display support on the trunk lid.

[0026] According to yet another preferred embodiment, a display support for holding a flat display includes a single sheet of material having apertures formed therein, the apertures adapted for permitting the flat display to be attached to the sheet of material by fasteners extending through the flat display and the apertures, and straps attached to the sheet of material by inserting a portion of each of the straps through one of the apertures and affixing a fastener on an end thereof, the straps for mounting the sheet of material on a supporting structure.

[0027] According to yet another preferred embodiment, a display support for holding a flat display includes a single sheet of material having a plurality of apertures formed therein, the apertures adapted for permitting the flat display to be attached to the sheet of material by fasteners extending through the flat display and the apertures, a horizontal support member having first and second ends, the first end having attachment means for releasable attachment to a towing hitch on an automobile, and a vertical support member connected to the second end of said horizontal support member and extending upwardly therefrom, the sheet of material mounted on the vertical support member by a fastener extending through at least one of the apertures whereby the display is positioned above the towing hitch.

[0028] According to yet another preferred embodiment, a display support for holding a flat display includes a single sheet of material having a plurality of apertures formed therein, the apertures adapted for permitting the flat display to be attached to the sheet of material by fasteners extending through the flat display and the apertures, and first and second support members for positioning horizontally on a flat surface, third and fourth support members connected to the first and second support members, respectively, and extending vertically therefrom, the sheet of material mounted on the support members by fasteners extending through at least four of the apertures and into each of the support members, and attachment means connected to the sheet of material for maintaining the display support on the flat surface.

[0029] According to yet another preferred embodiment, the apertures are four horizontally oriented rectangular apertures. Each of the apertures are positioned proximate a corner of the sheet and receive a strap extending vertically from said sheet of material.

[0030] According to yet another preferred embodiment, the apertures further include two pairs of vertically oriented rectangular apertures positioned on opposing sides of the sheet of material for receiving straps extending horizontally from the sheet of material.

Brief Description of the Drawings

[0031] Some of the objects of the invention have been set forth above. Other objects and advantages of the invention will appear as the invention proceeds when taken in conjunction with the following drawings, in which:

[0032] Figure 1 is a perspective view of a preferred display support according to the

invention;

[0033] Figure 2 is an environmental view of the preferred display support shown in Fig. 1, attached to a towing hitch on an automobile;

[0034] Figure 3 is a front elevation of the preferred display support shown in Fig. 1;

[0035] Figure 4 is a side elevation of the preferred display support shown in Fig. 1;

[0036] Figure 5 is a top plan view of the preferred display support shown in Fig. 1;

[0037] Figure 6 is a perspective view of another preferred display support according to the invention;

[0038] Figure 7 is a perspective view of another preferred display support according to the invention;

[0039] Figure 8 is an environmental side view of the preferred display support of Fig. 7 shown mounted on a trunk lid of an automobile;

[0040] Figure 9 is a rear elevation of a preferred top cover for use on a display support according to the invention;

[0041] Figure 10 is a plan view looking from below of the preferred top cover shown in Fig. 9;

[0042] Figure 11 is a front elevation of a preferred mounting bracket for use on a display support according to the invention;

[0043] Figure 12 is a plan view looking from above of a single sheet of material for making a display support according to the invention; and

[0044] Figure 13 is an environmental view of another preferred display support of the invention shown mounted on the rear surface of a van.

Description of the Preferred Embodiment and Best Mode

[0045] Referring now specifically to the drawings, a preferred embodiment of the display support according to the present invention is illustrated in Figure 1, and shown generally at reference numeral 10. The preferred display support 10 can be made from any rigid or semi-rigid material such as aluminum, steel or plastic. Display support 10 comprises a base frame member 11 and two side frame members 12 and 13 extending upwardly therefrom. The base frame member 11 and side frame members 12, 13 each have a "U" shaped channel formed by three walls 11A, 11B, 11C, 12A, 12B, 12C, 13A, 13B, and 13C, respectively. The walls 11A, 11B, 11C, 12A, 12B, 12C, 13A, 13B, 13C are configured such that the channels within the frame members 11, 12, 13 communicate with each other so that one continuous channel is formed into which a display 14, shown in phantom in Fig. 1, can be received and supported. The display support 10 provides rigid and releasable support to display 14. The display 14 can include a variety of substantially flat objects such as signs, pegboard for merchandise displays, changeable letter panels, dry erase panels, scroll message systems, posters, mirror frames, plaques, sheet music, airfilters for HVAC systems, tool racks, flooring samples, dartboards, decorative and fabric panels, books, corkboard, flat screen television or computer monitor frame, billboards, and dart boards or other game boards. In addition, a transparent cover and/or multiple displays can be simultaneously supported by the frame members.

[0046] Preferred display support 10 is particularly for use on an automobile 15 and is attached to the towing hitch 16 of the automobile 15 as shown in Figs. 1 and 2. Flat

mounting brackets 17, 18, and 19, are attached at opposing ends to side frame members 12, 13, as can be seen in Figs. 1 and 3. Mounting bracket 17 extends along the length of base member 11. Mounting brackets 17, 18 are attached to the vertical segment 20A of an "L" shaped hollow support bar 20 by fasteners, such as screws or bolts passed through circular holes 21 in the center of mounting brackets 17, 18. The support bar 20 is preferably made of a rigid material, such as aluminum, steel or plastic. As can be seen in Figs. 1 through 4, four stabilizing members 22, 23, 24, 25 are attached to mounting bracket 18 by fasteners passed through holes 21 located at opposing ends of mounting bracket 18. The stabilizing members 22, 23, 24, 25 are preferably made of a rigid material, such as aluminum, steel or plastic, however, they can also be flexible, adjustable straps, depending on the needs of the user. Stabilizing members 22, 23 are attached at opposing ends of mounting bracket 19 and extend downward to attach to the horizontal segment 20B of the support bar 20 proximate the center of the horizontal segment 20B. Stabilizing members 24, 25 are likewise attached at opposing ends of the mounting bracket 19 and extend downward to attach to the horizontal segment 20B of the support bar 20 proximate the point where the horizontal segment 20B meets the vertical segment 20A. The stabilizing members 22, 23, 24, 25 aid in stabilizing the frame members 11, 12, 13. Additional stabilizing members can be attached to the mounting brackets 17, 18, 19 as needed.

[0047] At the end opposite to where the horizontal segment 20B meets the vertical segment 20A, the horizontal segment 20B of support bar 20 is inserted into the automobile's towing hitch 16 so that a hole (not shown) formed in the horizontal segment 20B aligns with a hole 26 in the towing hitch 16. A pin 27 is inserted into the aligned holes

to attach the display support 10 to the automobile 15. The display 14 is positioned above the towing hitch 16 at approximately eye level of a person driving behind the automobile 15 to maximize exposure and readability of the display 14.

[0048] Accessories, such as license tags, turn signals, stop lights, merchandise hooks, merchandise and labels, can be attached onto the mounting brackets 17, 18, 19. In addition, a top cover 28, shown in Figs. 9 and 10, can be placed over the mounting bracket 19, shown in Fig. 11, to provide weather protection for the display 10. The top cover 28 has cut out sections 29 to allow for positioning of the cover 28 over straps, bolts and other rigid mounting materials. The cover 28 can be illuminated with lights 30 that project light across the display 14 and mounting bracket 19.

[0049] The display support 10 can be made from components or stamped and formed from a single sheet of material, as shown in Fig. 12. When formed from a single sheet of material the frame members 11, 12, 13 and mounting brackets 17, 18, 19 are integrated into one continuous piece with the mounting brackets 17, 18, 19 forming the rearmost surface of the display support 10. To make the display support 10 from a single sheet of material 31 cut-out portions 32 are made at opposing corners of the sheet 31, and then sheet 31 is folded along line 33 and again along line 34. Alternatively, the "U" shaped channels may be omitted, thus allowing the display support 10 to be integral with the display 14 itself rather than contained in frame members 11, 12, 13. Holes 21 are formed in the sheet 31 so that bolts, screws or other fasteners may be passed through to mount the display support 10. Holes 21 can also be used to attach accessories or the display 14 as described above. In addition, rectangular aperture 35A and 35B are formed so that

straps may be easily attached to the display support 10 to aid in mounting of the display support 10.

[0050] Another preferred embodiment of the display support is illustrated in Fig. 6, and shown generally at reference numeral 50. Preferred display support 50 can be mounted on any substantially flat surface. It should be understood that display support 50 comprises base frame member 51 and side frame members 52, 53 for releasably holding a display, which are identical to frame members 11, 12, 13 of the previous display support 10, and therefore this aspect of the embodiment will not be described in detail here.

[0051] Display support 50 comprises a base support segment 54, a vertical support segment 55 extending upwardly at a right angle from one end of the base support segment 54, and a diagonal support segment 56 attached to the base support segment 54 and vertical support segment 55 to form the shape of a right triangle. The frame members 51, 52, 53 and mounting brackets 57, 58, 59 are mounted on the vertical support segment 54 in the same manner as the frame members 11, 12, 13 and mounting brackets 17, 18 are mounted on the vertical segment 20A of display support 10. Base support segment 54 is positioned on a substantially flat surface. Pads 60 are positioned on the bottom surface of base support segment 54 to provide a cushioning effect. Mounting brackets 57, 58, 59 each have a horizontally oriented rectangular aperture 35A positioned at opposing ends of the brackets 57, 58, 59. In addition, brackets 57, 58, 59 each have a pair of vertically oriented rectangular apertures 35B positioned at opposing ends of the brackets 57, 58, 59. The apertures 35B are parallel to each other and perpendicular to apertures 35A. Apertures 35A are positioned interiorly to apertures 35B. Adjustable straps 61, 62, having

hooks 63 attached at one end, are connected to mounting bracket 57 by looping the straps 61, 62 through rectangular apertures 35A at opposite ends of mounting bracket 57. Adjustable straps 64, 65, having hooks 63 attached at one end, are connected to mounting bracket 59 by looping the straps 66, 67 through apertures 35A at opposite ends of mounting bracket 59. Adjustable straps 66, 67, having hooks 63, are connected to mounting bracket 58 by looping each of the straps 66, 67 through a pair of apertures 35B located at opposite ends of the bracket 58. While straps 61, 62, 64, 65 are adapted for extending vertically from the display support 50, straps 66, 67 are adapted for extending horizontally. The hooks 63 can be positioned on a supporting structure, and the straps 61, 62, 64, 65, 66, 67 tightened so that the display support is securely mounted on a supporting structure.

[0052] Another preferred embodiment of the invention is illustrated in Fig. 7, and shown generally at reference numeral 70. The display support 70 is particularly for mounting on a trunk lid 91 of an automobile 92, as shown in Fig. 8. It should be understood that display support 70 comprises frame members 71, 72, 73 and mounting brackets 77, 78, 79 for releasably holding a display identical to the frame members 11, 12, 13 and mounting brackets 17, 18, 19 of the previous display support 10, and therefore this aspect of the embodiment will not be described in detail here.

[0053] Display support 70 comprises a pair of base support segments 74, 75 and a pair of diagonal support segments 80, 81 connected to base support members 74, 75, respectively, and extending upwardly, at an angle, therefrom. Support segments 74, 75 can be made from a rigid square bar, as shown in Fig. 7, or can be made of a lighter

angled or tube material. Frame members 71, 72, 73 are mounted onto the support segments 74, 75, 80, 81 by connecting opposing ends of mounting bracket 77 to base support segments 74, 75 and opposing ends of mounting bracket 79 to diagonal support segments 80, 81.

[0054] Base support segments 74, 75 are positioned on trunk lid 91 as shown in Fig. 8. Pads 82 are positioned on the bottom surface of the base support segments 74, 75 to provide a cushioning effect and prevent scratching of the trunk lid 91. As shown in Fig. 7, adjustable straps 83, 84 are attached to mounting bracket 77 at one end and have hooks 85, 86, respectively, attached at the other end. Adjustable straps 87, 88 are attached to mounting bracket 79 at one end and have hooks 89, 90, respectively, attached at the other end. Hooks 85, 86 are placed under the posterior end of the trunk lid 91 of automobile 92, and hooks 89, 90 are positioned under the anterior end of the trunk lid 91, as shown in Fig. 8. The straps 83, 84, 87, 88 are adjusted so that there is tension within the straps 83, 84, 87, 88 in order to hold the display support 70 in position on the trunk lid 91. The trunk can be opened by raising the trunk lid 71 while maintaining the display support 70 in place on the trunk lid 91. It should be noted that display support 70 can be mounted on an automobile roof and many other substantially flat surfaces using the same method.

[0055] Finally, another preferred embodiment is illustrated in Fig. 13, and shown generally at reference numeral 100. The preferred display support 100 comprises frame members 111, 112, 113 and mounting brackets 117, 118, 119 that are identical to frame members 11, 12, 13 and mounting brackets 17, 18, 19 of display support 10. Adjustable straps 101, 102, having hooks 109, 110, respectively, are connected to opposing ends of mounting

bracket 117. Adjustable straps 103, 104, having hooks 105, 106, respectively, are connected to opposing ends of mounting bracket 119. Display support 100 can be easily mounted to a substantially flat surface, such as the rear of a van 107 as shown in Fig. 13, by positioning hooks 105, 106 over the top of the hatch between the hatch and roof, and hooks 109, 110 under the bottom of the hatch between the hatch and rear end of the van 107. The straps 101, 102, 103, 104 are sufficiently tightened to stabilize the display support 100 on the van 107. The display support 100 is maintained on the hatch when it is opened. Pads 108 are positioned on opposing ends of mounting brackets 117, 118, 119 to provide a cushioning effect and prevent scratching of the van 107. If needed, additional stabilization of the display support 100 can be provided by using additional straps. For example, straps can be attached at opposite ends of mounting bracket 118 and extended horizontally so that hooks can be positioned on the sides of the hatch. in addition to the top and bottom.

[0056] A display support and method of using same is disclosed above. Various embodiments of the invention can be made without departing from its scope. While the above description of the preferred embodiments is for a display support mounted on an automobile, it should be noted that the invention encompasses a display support that can be mounted on a variety of supporting structures such as walls, poles, ceilings, stands, fences and floors. Furthermore, the foregoing description of the preferred embodiment of the invention and the best mode for practicing the invention are provided for the purpose of illustration only and not for the purpose of limitation-- the invention being defined by the claims.